

Application Serial No. 10/554,288  
Amendment dated 25 October 2007  
Reply to Office Action dated 25 April 2007

*REMARKS*

Claims 1-3 and 15-16 have currently been amended, claims 12-13 and 17-27 are cancelled, and new claims 28-31 have been added. Claims 1-11, 14-16 and 28-31 are currently pending in the present application.

The methods of claims 1 and 16 have been amended for the sake of improved clarity. Specifically, the following changes have been made:

- Claims 1 and 16 have been amended to specify that the alkaline solution has a value of pH of between 9 to 10, and that the milled cereal grain or the milled part of the cereal grain is extracted with the alkaline solution for a period of about 15 to about 45 minutes. Support for these amendments is provided, for example, at page 14, lines 16-23 and 25 of the description.
- Claim 1 has been further amended to specify that the alcohol is added in an amount of between 10% to 20% (vol/vol). Support for this amendment is provided, for example, by original claims 2 and 3, page 17, line 33 of the description, and by Example 1.
- Claims 2-3 have been amended to remove redundancy in view of the amendments made to claim 1.
- Claim 15 has been amended for consistency with amended claim 1.
- Claim 16 has been further amended to replace the term “participate” in step (ii) with the term “particulate,” thereby correcting an obvious error.
- Claim 16 has also been further amended to define the flocculant and the coagulant recited in step (ii) based on page 15, lines 11-22 of the description.

New claims 28-31 have been added to claim additional features of the present invention. New claim 28 is supported, for example, at page 15, lines 11-22 of the description. New claims 29 and 31 are supported at page 17, lines 32-33 of the description, and new claim 30 is derived from original claims 2 and 3.

It is submitted that these amendments do not constitute new matter, and their entry is requested.

Application Serial No. 10/554,288  
Amendment dated 25 October 2007  
Reply to Office Action dated 25 April 2007

### **Objection to Specification**

The Examiner has required that the trademarks referenced in the present specification be capitalized and accompanied by their respective generic terminology.

The specification has been amended, where necessary, to capitalize identified trademarks, and provide definitions or generic terminology for the listed trademarks. In addition, the terms “Celite® C65” and “CELITE® C65” in the specification have been replaced with the correct trademark of “CELPURE® C65” associated with diatomaceous earth having a permeability of 0.065 Darcy, which may be used in the present invention, and the terms “Celite® C300” and “CELITE® C300” in the specification have been replaced with the correct trademark of “CELPURE® C65” associated with diatomaceous earth having a permeability of 0.300 Darcy, which may also be used in the present invention.

It is submitted that these amendments do not constitute new matter, and their entry is requested.

Removal of the Examiner’s objection to the specification is respectfully requested in view of the foregoing amendments and comments.

### **Claim Objection**

The Examiner has objected to claim 16, indicating that the term “participate” should be changed to the term “particulate”.

Claim 16 has been amended in accordance with the Examiner’s suggestion.

Removal of the Examiner’s objection to claim 16 is respectfully requested in view of the foregoing amendment and comments.

### **Claim Rejection Under 35 U.S.C. § 102(b)**

The Examiner has rejected claims 1-6, 9, 11-12 and 14-16 under 35 U.S.C. § 102(b) as being anticipated by Bhatty (U.S. Patent No. 5,518,710).

Without conceding to the propriety of the Examiner’s rejection, Applicant has elected to amend claims 1 and 16 to clarify that the step of extracting (step (i)) is conducted using an

Application Serial No. 10/554,288  
Amendment dated 25 October 2007  
Reply to Office Action dated 25 April 2007

alkaline solution having a value of pH of between 9 to 10 for a period of time of about 15 to about 45 minutes. Applicant has further elected to amend claim 16 to clarify that the flocculant is selected from the group consisting of a polyacrylamide, a quaternary acrylate salt and a natural flocculant macromolecule, and the coagulant is selected from the group consisting of alum, lime, ferric chloride, ferrous sulfate, an organic polymer and a synthetic polyelectrolyte with anionic or cationic functional groups. The Examiner's rejection of claim 12 has been rendered moot by the cancellation of that claim.

Bhatty teaches a method of extracting a  $\beta$ -glucan from a cereal bran using a basic solution having a value of pH greater than 10 and for a period of time of from about 2 to about 25 hours.

Bhatty does not, however, teach or suggest the presently claimed method of isolating a  $\beta$  (1-3)  $\beta$  (1-4) glucan from a milled cereal grain or a milled part of the cereal grain, which involves a step of extracting the milled cereal grain or the milled part of the cereal grain using an alkaline solution having a value of pH of between 9 to 10 for a period of time of about 15 to about 45 minutes, and a step of precipitating the  $\beta$  (1-3)  $\beta$  (1-4) glucan by adding from *between* 10% to 20% (vol/vol) of a C<sub>1</sub>-C<sub>4</sub> alcohol to the extract, as recited in presently amended claim 1, or by adding about 10% to about 25% (vol/vol) of a C<sub>1</sub>-C<sub>4</sub> alcohol to the extract, as recited in presently amended claim 16. Furthermore, Bhatty does not teach a step of adding the flocculant and/or coagulant defined in amended claim 16 to an extract of  $\beta$  (1-3)  $\beta$  (1-4) glucan to coagulate particulate material.

Accordingly, the methods claimed in amended claims 1-6, 9, 11 and 14-16 are novel in view of Bhatty.

Withdrawal of Examiner's rejection under 35 U.S.C. § 102(b) is respectfully requested in view of the foregoing amendments and comments.

### **Claim Rejections Under 35 U.S.C. § 103**

The Examiner has rejected claims 7 and 8 under 35 U.S.C. § 103(a) as being unpatentable over Bhatty in view of Puski *et al.* (U.S. Patent No. 4,830,861). In addition, the Examiner has

Application Serial No. 10/554,288  
Amendment dated 25 October 2007  
Reply to Office Action dated 25 April 2007

rejected claim 10 under 35 U.S.C. § 103(a) as being unpatentable over Bhatty in view Novozymes (June 1, 2002, novozymes.com). Examiner has also rejected claim 13 under 35 U.S.C. § 103(a) as being unpatentable over Bhatty in view of Potter *et al.*

Applicant has addressed the Examiner's rejections of claims 7-8 and 10 by way of the comments and amendments provided above in response to the Examiner's rejection under 35 U.S.C. § 102(b). The Examiner's rejection of claim 13 has been rendered moot by the cancellation of that claim.

Claims 1 and 16, which include the feature of cancelled claim 13, are patentable in view of the combination of Bhatty and Potter *et al.* in that they include a step of extracting a milled cereal grain or a milled part of a cereal grain with an alkaline solution having a value of pH of *between* 9 to 10 for a period of time of about 15 to 45 minutes. Neither Bhatty nor Potter *et al.* teach or disclose an extraction step, which includes this specific *combination* of features recited in presently amended claims 1 and 16. Rather, Bhatty discloses an extraction step that includes the combination of using a basic solution having a value of pH greater than 10 for a period of about 2 to about 25 hours, and Potter *et al.* discloses an extraction step that includes the combination of using a basic solution having a value of pH of 10 for a period of 2 hours.

Furthermore, Bhatty teaches away from using basic solutions having moderate values of pH with shorter extraction periods by specifying that "a higher pH can be used if a shorter extraction period is desired" (column 3, lines 29-30).

Claim 1 is further distinguished from the methods described in Bhatty and Potter *et al.* in that it specifies that *between* 10% to 20% (vol/vol) of a C<sub>1</sub>-C<sub>4</sub> alcohol is added to the purified extract to precipitate the β(1-3) β(1-4) glucan. Bhatty does not teach or suggest using such an amount of alcohol to effect precipitation and the method of Potter *et al.* does not include a precipitation step using an alcohol.

Claim 16 is further distinguished from the methods described in Bhatty and Potter *et al.* in that it specifies that the flocculant is selected from the group consisting of a polyacrylamide, a quaternary acrylate salt and a natural flocculant macromolecule, and the coagulant is selected from the group consisting of alum, lime, ferric chloride, ferrous sulfate, an organic polymer and

Application Serial No. 10/554,288  
Amendment dated 25 October 2007  
Reply to Office Action dated 25 April 2007

a synthetic polyelectrolyte with anionic or cationic functional groups is used to remove particulate material from the extract. Neither Bhatty nor Potter *et al.* teach or suggest using such flocculants or coagulants to remove particulate material from a  $\beta$  (1-3)  $\beta$  (1-4) extract.

Claims 1, 7-8, 10 and 16 are, therefore, patentable in view of Bhatty in combination with one or more of Puski *et al.*, Novozymes and Potter *et al.*

Withdrawal of the Examiner's rejections under 35 U.S.C. § 103 is respectfully requested in view of the foregoing amendments and comments.

It is respectfully submitted that the above-identified application is now in a condition for allowance and favorable reconsideration and prompt allowance of these claims are respectfully requested. Should the Examiner believe that anything further is desirable in order to place the application in better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

By \_\_\_\_\_ /Jeffrey L. Ihnen/  
Jeffrey L. Ihnen  
Registration No. 28,957  
Attorney for Applicant  
1425 K Street, N.W., Suite 800  
Washington, D.C. 20005  
phone: 202-783-6040  
fax: 202-783-6031

1441040\_1